15¢

November 4, 1950

SCIENCE NEWS LETTER

THE WEEKLY SUMMARY OF CURRENT SCIENCE

Starfish Feet

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GENETICS-NUCLEAR PHYSICS

No New Types of Freaks

Rays from atomic bombs would not cause any more grotesque types of human being than those now known, but mutations would simply occur more often.

➤ ATOMIC warfare would not give rise to new and fearsome races of human monsters in future generations.

That was the opinion of a panel of atomic and genetic experts who met in London to discuss "The Biological Hazards of Atomic Energy."

According to such authorities as Dr. D. G. Catcheside, Cambridge University geneticist, the mutation types produced by exposing reproductive cells to the kinds of rays given off in an atomic explosion are no different from those which spring up quite spontaneously. The only effect of irradiation is to speed up the mutation rate so that the odd types appear more frequently.

Referring specifically to atomic bombs, Dr. Catcheside said: "Geneticists would not expect any more bizarre types following irradiation (as at Nagasaki and Hiroshima) than would turn up naturally."

Nonetheless the experts urged that extreme precautions be taken to protect people of reproductive age and younger from unnecessary exposure to penetrating rays, including X-rays. All such rays cause damage to the genes, which carry hereditary characteristics from generation to generation. It is conservatively estimated that over 99% of mutated genes are harmful.

In most cases the hereditary changes which take place are recessive in character, that is, they must be inherited from both parents to show up as a positive defect. The results of present carelessness in exposure, therefore, may not show up for many generations, but ultimately they will result in human misery and wastage.

Prof. K. Mather of Birmingham University put it like this: "If you murder a gene, sooner or later murder will out!"

The principal harmful genetic effects of excessive irradiation were listed as: an increase in stillbirths and miscarriages, an increase in inherited deformities and an increase in the incidence of familial disease. All of these would show up in future generations.

According to studies made at the British Atomic Energy Research Establishment at Harwell it is not the person working on atomic piles that is in special danger of excessive irradiation. Precautions taken to protect such workers from stray atomic rays have proven effective. For the most part the exposure of such workers is kept well within the agreed safe levels.

Much more danger exists in the indiscriminate use of X-rays in mass chest radiography for tuberculosis and in such lay devices as the X-ray machines used in shoe stores so that you can see how your shoes fit. Though the immediate danger to the person so exposed is slight, the cumulative effect over a whole population may well cause serious increases in harmful mutations in future generations.

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MEDICINE

Yardstick for Cancer Test

A cancer detection test, to be used as X-rays are in spotting TB, would have to detect 90% of the cases and show no more than 5% false positive results.

➤ A YARDSTICK for judging a cancer detection test has been set up by the National Cancer Institute. A test that measures up to this yardstick will: 1. detect 90% of the actual cases of cancer and 2. show no more than 5% false positive results.

This yardstick was described by Dr. John E. Dunn at the conference of State and Territorial Health Officers in Washington.

So far, he said, no test suitable for detecting cancer in the healthy population, as X-rays are used to screen tuberculosis patients, has yet measured up entirely to the yardstick.

This does not rule out some of those now under investigation, however. Some of them have not measured up because they have not been tried on enough healthy people in the cancer age group.

A blood flocculation test reported last spring by Dr. Harry S. Penn of the University of California at Los Angeles needs to be tried by other scientists to see whether they can get as good results with it as its originator.

The yardstick Dr. Dunn described is for tests that can be given easily and cheaply to large numbers of persons to pick up unsuspected cases of cancer in any part of the body.

Using a cytological, or cell smear test, unsuspected cancer of the womb has been detected on the average in one out of every 100 women examined during the past two years in a screening program carried on by the National Cancer Institute at the U. S. Public Health Service dispensary in Washington.

These results were reported by Dr. E. D. Murphy. Diagnosis of cancer of the womb and more knowledge of the controversial pre-cancerous conditions of the womb may come from Dr. Murphy's success, just announced, in producing cancer of the womb, or uterus, in mice.

These cancers are very much like human cancers and shed cells much as human cancers do. The cells that have been shed form the basis of the cell smear diagnostic test for cancers of the uterus and other organs, such as lungs and stomach, which was originally devised by Dr. G. N. Papanicolaou of Cornell University Medical College, New York.

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ARCHAEOLOGY

Greek Language Riddle One Step Nearer Solution

➤ THE RIDDLE of an unreadable language that was used by the Greeks over 3,000 years ago is one step nearer solution.

Dr. Carl W. Blegen of the University of Cincinnati reported in Philadelphia that he and Dr. Emmett L. Bennett of Yale University have sorted out 1,300 words of this unreadable language. From these words they have arranged an alphabet of 74 characters as well as 50 other signs.

"We don't know how it sounds or what it means, but 1,300 words are more than basic in whatever the language is," Dr. Blegen told the members of the American Philosophical Society meeting. "All that is needed to begin a dictionary in a language is 800 words."

Drs. Blegen and Bennett compiled the words and alphabet when they were preparing for publication a book to contain reproductions of hundreds of clay tablets on which the language is written. This book will give language experts a chance to study the clay tablets, all of which are bookkeeping records.

The clay tablets were discovered by Dr. Blegen in the archives room of the palace of King Nestor, who lived more than 3,000 years ago in Greece. These hundreds of tablets were the first to be found on the mainland of Greece, although the same language had been found on the Island of Crete 50 years ago.

When discovered, the tablets were soft. They had to be dried and hardened, cleaned and photographed. During the war they were stored in an underground vault in Greece. Last summer they were brought back to the United States for study.

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NUTRITION

Go Deep for Food

An unexplored layer in the ocean may be the source of undreamed of quantities of food. Sawdust and ocean fish farms will be sources of food for the hungry.

➤ PILES of sawdust, "fish farms," or unknown creatures which live in a mysterious, echo-bouncing layer in the ocean's depths, all may some day help to feed a hungry world.

Great masses of tiny green algae could be cultivated as a new form of fresh water food. New hybrid plant varieties could greatly boost the vital output of farmers everywhere, from America's corn and wheat belt to Chinese rice paddies or tropical sugar cane plantations.

These are all serious possibilities for increasing the world's future food supply, four scientists reported to the American Philosophical Society in Philadelphia, Pa.

Pilot plants are already in operation converting material with little or no food value —sawmill residue, the evil-smelling wastes from wood-pulp mills and cast-off parts of agricultural crops—into digestible sugars, proteins and fats, Dr. Alfred J. Stamm, research chemist of the U. S. Forest Products Laboratory at Madison, Wis., said.

Next to soybean meal, yeast foods made from wood sugar molasses appear to be the cheapest source of proteins in the world, he said. Proteins are among the major foundation stones of human and animal nutrition.

From a ton of wood waste, a ton of sugar-rich molasses can be produced by a Forest Service process developed during World War II, Dr. Stamm reported. This molasses is palatable to cattle but not to humans. However, the bitterness (much like blackstrap molasses) can be removed by filters or by crystallizing out pure dextrose sugar.

From wood molasses, Dr. Stamm said, a protein livestock feed high in vitamins can be produced by growing yeasts and molds on the sugar. These yeasts compare favorably in food value with baker's and brewer's yeasts.

Dr. H. A. Spoehr, emeritus chairman of the division of plant biology of the Carnegie Institution of Washington and consultant to the Secretary of State, told of current experiments in growing a form of fresh water algae, the chlorellas, as another source of proteins and fats.

Dr. Merle T. Jenkins, plant scientist for the U. S. Department of Agriculture, said tremendous gains have already been achieved in the yields of farm crops by introduction of hybrid strains.

Examples he cited: Wheat output has gone up 20% in 25 years in South Dakota; hybrid corn has boosted acre yields by at least 25%; Japanese rice production has gone up 70% in the past 65 years; Maine is growing 75% more potatoes per acre than 20 years ago; hybrid strains have doubled the yield of sugar cane in Java in 30 years.

It is fish and other foods from the oceans, however, which may ultimately have to feed expanding populations in areas of the world where there is not enough to eat, Dr. L. A. Walford, chief of fishery biology in the U. S. Fish and Wildlife Service, wrote in a paper which was read in his absence.

In the immediate future, he said, cultivation of fish like farm crops, growing them in artificial ponds, in rice paddies, in man-made lakes back of dams or in irrigation ditches "can be a most fruitful way of improving the supply of protein foods."

But in the ocean, Dr. Walford reported, "there is an unknown thing, still unexploited, still unexplored, which may prove to be an extravagantly large food resource." This is what scientists now call the "deep scattering layer."

During World War II, echo sounding instruments discovered a layer of "something" between the surface and the bottom, everywhere in the ocean. Sometimes there was more than one such layer. Scientists who have studied the phenomenon, Dr. Walford said, agree that it is caused by masses of living organisms. But because nets do not exist which can be used at the great depths where the layer occurs, what these organisms are remains unkown.

"The least result to be expected from research into the deep scattering layer would be the extension of human knowledge about the earth," Dr. Walford wrote. "The most practical result might be undreamed-of quantities of food."

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AGRICULTURE

Natural Rubber Reserve

➤ JUST as in the first days of World War II, the Government is again showing interest in a scraggly desert plant called guayule. The reason: Guayule produces rubber—natural rubber—and it can be grown in the United States.

Scientists of the Department of Agriculture have announced they have succeeded in breeding new hybrid strains of the plant which yield 25% to 40% more rubber than the World War II variety.

Work on guayule has been going on at

UP THROUGH THE HATCH—The Air Force H-12, new multi-purpose helicopter, effects a rescue from a life raft. The man is brought directly into the cabin of the helicopter by an inside hoist.

Salinas, Calif., since 1942—the year the Japanese cut the U. S. off from the natural rubber plantations of the Far East. Then, a few weeks after Pearl Harbor, Congress authorized 32,000 acres of guayule planting in California as an emergency source of rubber.

Not much rubber was obtained. It took until 1944 for the first plants to be harvested and the cost per pound of guayule rubber was very high. Synthetic rubber was developed meanwhile to meet America's need.

But the research on guayule continued. The Agriculture Department believes the plant may some day be grown profitably on some 2,000,000 acres of dust-dry land in Texas.

Test plantings have been carried out with the aid of the Texas Agricultural Experiment Station. Other plantings have been made in California on Government-owned range land.

One of the new hybrids developed by the scientists is reported to breed true from seed and to carry first-generation vigor into succeeding generations. It is believed that seedlings of the productive new strains will produce about 1,200 pounds of rubber per acre in five years of growth.

Guayule will probably never supply all the natural rubber this country needs. But with the tropical rubber belt of Indonesia and Malays under increasing Communist pressure, the U. S. is once again eyeing this desert shrub as a possible "living reserve" of rubber here at home.

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GENERAL SCIENCE

UNESCO Gift Stamps Help Teach Science Overseas

➤ YOUR quarter can help send film equipment or medical and scientific books to institutions in countries that cannot now buy these and other needed educational materials because of their dollar shortages.

A plan by which school children, youth groups, adult organizations and all others can contribute to reconstruction overseas is being discussed in Washington. Known as the UNESCO Gift Stamp program, small contributors would buy stamps toward the purchase of $10 gift coupons. These gift coupons are now being used to buy books, films and other educational, scientific and cultural supplies for countries overseas.

The United Nations Commission for UNESCO states in Washington that the Gift Stamps are expected to be available after the first of the year.

Specific projects for which the money may be used include equipping school laboratories, buying movie projectors for mass education campaigns, sending medical and scientific books to schools and professional societies and training programs for technical personnel in underdeveloped countries.

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ZOOLOGY

Losses Cut 75% with Rat Control Measures

➤ WITH warfarin, a new rat-killing poison, and with other new anti-rodent "ammunition," the U. S. Fish and Wildlife Service believes the nation's annual loss to rats and mice can be cut by at least 75%.

On one dairy farm alone, warfarin killed 1,400 rats in two months, Walter W. Dykstra, rodent control official of the Fish and Wildlife Service, told the National Pest Control Association in Cincinnati.

Warfarin is a slow-acting poison which causes internal hemorrhages in housemice or rats, even if only a very small amount of it is consumed. And animals do not know they've been poisoned after eating warfarin bait; they keep coming back for more until they die.

Other tricks to keep away rodents and bird pests: Stringing charged wires along building ledges and over doorways to create an electrical field which will shock pigeons or starlings. And sending out high-frequency sound waves, above the audio limit of the human ear, to scare away both birds and rats and mice. This method, said Mr. Dykstra, has even caused rats to jump overboard from ships.

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What infections does a digestive enzyme now fight? p. 296.

What kind of banks beside blood banks may soon become popular? p. 296.

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Photographs: Cover, Woody Williams; p. 291, Bell Aircraft; p. 293, Reichstein photo from World Wide Photos; p. 294, General Electric; p. 295, Yale University News Bureau; p. 298, American Red Cross; p. 304, RCA Victor.

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MEDICINE

Nobelists Found Cortisone

Dr. Kendall, Dr. Hench and Dr. Reichstein are awarded the Nobel prize for the discovery of the gland chemical which has found many uses.

➤ MILLIONS of sufferers from arthritis, now and in the future, will join in the world's thanks to the three latest Nobelists in medicine, Drs. Edward C. Kendall and Philip S. Hench of the Mayo Clinic and Dr. Tadeus Reichstein of the University of Basle, Switzerland.

But the arthritis sufferers, rejoicing over relief of painful, stiff and crippled joints, are not the only ones to benefit from the chemical remedy discovered by these three men.

Little children bed-ridden with heart-crippling rheumatic fever, patients with severe eye inflammations, asthmatics and other allergy sufferers, victims of severe burns and perhaps, in future, even patients with cancerous diseases of blood and lymph glands may be helped from the discovery of a gland chemical now called cortisone.

The chemical is produced by the outer part of two small glands, the adrenals, that are located just above the kidneys. Dr. Reichstein, organic chemist who synthesized the anti-scurvy vitamin C almost two decades ago, and Dr. Kendall, biochemist, both spent more than 10 years in their laboratories half a world apart extracting and identifying the various chemicals produced by these two small glands. Then, independently but at about the same time, they announced the discovery of cortisone.

Meanwhile Dr. Hench for about the same two decades had been searching for a chemical that would help the arthritis sufferers he saw daily at the Mayo Clinic. He observed that attacks of jaundice, pregnancy, periods of fasting, surgical operations and anesthesia without operation, each would temporarily relieve the patients of their pain and cause the joint swellings to go down. From all this, he suspected that the answer to the arthritis problem lay in the adrenal glands. When Dr. Kendall, whose work had been supported by the Research Corporation, New York City, was able to supply him with the first small amount synthesized from a bile acid, he got dramatic proof in the arthritis patients who could walk free from pain after a few doses of the gland chemical.

Now cortisone is available to physicians generally for treatment of patients at a cost to the physician of $35 for about one-thirtieth of an ounce.

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MEDICINE

Stand-In for Lost Stomach

➤ A WAY to give a patient a new stomach when his has been removed because of cancer was reported by Dr. C. Marshall Lee, Jr., of the University of Cincinnati College of Medicine at the American College of Surgeons meeting in Boston, Mass.

Dr. Lee would substitute for the stomach that part of the large intestine which runs up the right side of the abdomen from the appendix region. This is called the right colon, or ascending colon.

By cutting free this and the end four inches of small intestine and rotating it counter-clockwise, it can be brought up into the stomach location. The piece of small intestine is the right size for attachment to the esophagus, or gullet, down which food is swallowed into the stomach.

With this operation, Dr. Lee thinks, the patient would have a kind of stomach which could act as a reservoir for food, even if it did not do much digesting. The patient would then be able to eat full meals and not get undernourished as sometimes happens now when the entire stomach is removed.

The new colon-stomach would be able to absorb water and send the food along into the intestines. Hydrochloric acid could be given to make up for the lack due to absence of a real stomach. At the age when stomach cancer usually develops, however, stomach acid is normally low anyway, Dr. Lee points out. Liver extract or other remedy could be given for any anemia that might develop.

The right colon is usually not involved even when a cancer in the stomach has grown to large size, so it would be a healthy organ for use as a stomach substitute.

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***NOBELISTS IN MEDICINE**—Dr. Tadeus Reichstein, professor of chemistry at the University of Basel, Switzerland, and two American doctors, Dr. Philip S. Hench and Dr. Edward C. Kendall of the Mayo Clinic, have been named as joint winners of the 1950 Nobel prize in medicine. The prize came for their work in the discovery of cortisone which has spelled relief for millions suffering from various diseases.*

MEDICINE

Lift Veil on Rectal Cancer

A frank approach to the problem confronting 40,000 persons attacked by cancer of the rectum this year is urged in the hope of saving these lives.

➤ THE AMERICAN people and their doctors, the general practitioners of the nation, are once more urged to "lift the veil of prudery," that thousands of lives may be saved.

The appeal to save lives by approaching frankly a health problem was made by Dr. Austin V. Deibert of the National Cancer Institute, U. S. Public Health Service.

Of the estimated 101,000 new cases of cancer of the digestive tract that will develop in 1950, more than 40,000 will be located in the last eight inches of the lower bowel, Dr. Deibert told members of the American College of Surgeons meeting in Boston.

About three-fourths of these, at least 30,000 patients, can be cured if diagnosis is made early, he stated.

While cancers of the stomach and small intestine are difficult to diagnose because they cannot be felt and cannot be seen without elaborate, often uncomfortable procedures, a large proportion of digestive tract cancers may be regarded as "accessible site" cancers.

"More than two out of every five cancers in the digestive tract are within reach of the physician's finger or proctoscope," Dr. Deibert stated.

The proctoscope is an instrument for inspecting the rectum.

The whole subject, he said, "is so beclouded by false modesty that it is difficult to discuss in plain terms.

"Through intensive effort, we have lifted the veil of prudery from syphilis tests and self-examination of the breasts. We must win the right to be equally frank about rectal cancer.

"A simple examination can disclose early rectal cancer and thereby prevent unnecessary death."

Newspapers and magazines, he said, can perform a service by presenting the facts about this cancer to the public.

"We will take our greatest step toward controlling lower bowel cancer when not only physicians but the people recognize it as a controllable disease," he stated.

One of the biggest obstacles to the control of digestive tract cancers at all locations, Dr. Deibert said, is the "pessimistic attitude of the physicians themselves."

As long as this attitude prevails, the average case that comes to the surgeon will continue to be the advanced case with little hope of cure.

In an effort to overcome this attitude and promote earlier diagnosis of digestive tract cancer, the National Cancer Institute and the American Cancer Society have jointly produced a training film for physicians which was previewed at the American College of Surgeons meeting.

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MEDICINE

38,000 Stomach Cancers

➤ SOME 38,000 Americans will develop stomach cancer this year, Dr. J. R. Heller, Jr., director of the National Cancer Institute, declared in Chicago.

Only one out of every five of this year's stomach cancers victims will have their cancers diagnosed early enough for them to have a good chance of survival. The reason is that stomach cancer is "notorious" for not showing any symptoms in its early, curable stages.

Right now many of the 38,000 are apparently perfectly well, going about their business unaware of the danger that threatens them. The same is true to only a slightly less extent of many others who will develop other kinds of cancer this year. Some of these others may be sick and going to their doctors. But their symptoms are vague, or could come from many conditions besides cancer.

A cancer detection test, or several cancer detection and diagnostic tests, are needed to save these lives. One is needed to detect cancer patients among the apparently well. Another is needed to help diagnose cancer in cases where the symptoms and findings are not clear. Separate tests may be needed to diagnose different kinds of cancers and those located in different parts of the body.

In Chicago at the first Conference on Cancer Diagnostic Tests more than a hundred research scientists met to evaluate present cancer tests and to determine what lines of research would produce better ones.

"No test yet reported is completely specific for cancer," Dr. Heller stated at the National Cancer Institute-sponsored meeting.

Perhaps no general cancer diagnostic test will ever be discovered. But National Cancer Institute scientists and many others throughout the nation are hopeful that some change in the proteins of the blood, or in the enzymes which control many of the body's chemical reactions or in the immune mechanisms of the body will give some clues to better, earlier cancer detection.

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ENGINEERING

Flickering Lights from Welding Machines Near End

➤ FLICKERING lights caused by electric welding machines can be eliminated through the use of information contained in a bulletin soon to be issued, the American Institute of Electrical Engineers was told in Oklahoma City.

Prof. M. Stanley Helm, Prof., Max A. Faucett and Marvin Fisher, Jr., of the University of Illinois, explained that they had computed tables showing the size of wires and the amount of current needed to prevent the flicker. Previously power companies have had to guess at these requirements. Electric motor loads as far as five miles away have important bearing on three-phase power lines, they said.

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"UNCHARTED AREAS"—A technician in the Measurements Laboratory of the General Electric Company's Meter and Instrument Divisions recently opened in Lynn, Mass., prepares to plate a part of a measuring device in the inorganic finish laboratory. A special ventilating system changes the air in this area 67 times an hour. The laboratory is dedicated to the "exploration of uncharted areas in the field of electrical measurements".

AERONAUTICS-METEOROLOGY

Airline Delays May Be Cut

A new weather prediction method will eliminate much of the trouble of major airlines caused by poor weather conditions.

➤ "STACKING UP" over airports, switching passenger planes to different fields and cancellations of flights because of weather conditions at the destination will be greatly lessened by a new method of calculating the weather risk now being devised.

U. S. Weather Bureau experts, with the support of the government's Air Navigation Development Board, are developing the method at the Washington National Airport. They believe that airfield controllers will be able to know the percentage of chance of poor ceiling, visibility, and wind and aircraft icing conditions for periods up to six hours in the future. Such forecasts would be used for determining the rate at which aircraft could land and take off and whether, six hours later, it would be advisable to send planes toward a certain airport.

The method is based on findings of J. C. Thompson, formerly at the Weather Bureau's airport station in Los Angeles. Mr. Thompson found that variations in weather conditions at certain localities in California and Arizona had a relationship with whether it was going to rain in Los Angeles. By noting these variations and plotting them on a graph, he was able to predict rain slightly more accurately than by the usual methods and also much more speedily. Within two minutes after receiving data on his variables he would have a forecast.

What is more, Mr. Thompson was able to tell the per cent chance of rain within the 36 hours after he made his forecast.

The problem was to pick six variables out of all the hundreds of variables in weather phenomena. In the Los Angeles experiment, this was a matter of a weatherman's experience. Mr. Thompson plotted on a graph the altitude at which 700 millibars of atmospheric pressure could be found over Oakland against the difference between the sea level pressures in San Francisco and Los Angeles, the wind direction at Sandberg against the temperature at a certain altitude at Santa Maria, Calif., and the sea level pressure at San Francisco against the pressure differences between Los Angeles and Phoenix.

Now Mr. Thompson is working at the Washington National Airport, trying to find a new set of weather variables from which he can predict the percentage of chance in conditions of ceiling, visibility, icing and winds six hours in advance at that airfield. He hopes to have a reasonably good set of variables by next June, but he expects these will constantly be improved upon.

Next step is to work out a general theory of selecting variables, based on the experience at Los Angeles and Washington. Once that is done, it is the hope that reliable variables could be worked out for every major airport in the nation.

Mr. Thompson believes that the method of numerical forecasting has application wherever man has to take a calculated risk with the weather. An industrialist with equipment open to the rains knows that it will cost, say $100, to cover it and that his loss if he did not cover it would be $1,000. If he is told that there is a 10%, 20% or 30% chance of rain, he can calculate whether it is worth while to spend the money protecting his equipment.

Since most military operations are calculated risks, Mr. Thompson believes the numerical method of forecasting could be as well applied on the field of battle.

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ENGINEERING

Underwater Movie Camera Has No Cables to Surface

➤ A NEW underwater motion picture camera for use by diver-photographers differs from earlier models in that it is completely self-contained. Camera and diver require no air supply or electric cable connections to the surface.

It is a development of the U. S. Navy. Details of construction were revealed at a meeting of the Society of Motion Picture and Television Engineers by Chief Photographer's Mate R. R. Conger of the Naval Photographic Center in Washington. It is claimed to be the first completely mobile underwater motion picture camera.

This submarine camera is designed so that it can be completely operated from the outside, with external controls for the lens diaphragm, focus and start-stop switch. It has detachable wings and vertical rudder which aid in transporting and stabilizing the equipment in the water. The camera weighs 107 pounds in air, but can be adjusted to have either positive, negative or neutral buoyancy under water.

Special equipment for the diver using the camera has been developed. Included is an automatic, compressed air, self-contained diving unit. Also there is a face mask and swim webs for the feet. Equipped with these aids, the diver-photographer is able to swim with the camera in any direction or to any depth down to approximately 200 feet.

Uses of the camera range from photographing ship hulls to recording the geological formation of the sea bottom. It can also be used to photograph both marine life and plants.

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MEDICINE

Six New Strains Influenza Found

➤ DISCOVERY of six new strains of influenza virus, all of them found when influenza A-prime was around, was announced in the journal, SCIENCE (Oct. 27).

One of the strains, tentatively called Influenza C, was detected, during a 'flu epidemic last March, by Dr. Thomas Francis, Jr., J. J. Quilligan, Jr., and Miss Elva Minuse of the University of Michigan School of Public Health. This virus, their tests show, has been circulating as far back as 1936. They believe it is the cause of a widespread respiratory disease like 'flu which comes in epidemics.

The other five viruses were discovered by Dr. Thomas G. Ward and Miss Bernice E. Eddy of the Johns Hopkins University, Baltimore, and the National Institutes of Health, Bethesda, Md. These five viruses differ from other influenza viruses in their effect on mice. They will attack mice after growing in only one instead of a series of chick embryos. This may be characteristic for a specific group of viruses, it is suggested, and may be an aid in identifying viruses causing one kind of 'flu from those causing another.

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23-YEAR JOB—Miss Ida Barney, shown at the measuring engine in the Yale observatory, has just completed a measuring job on stars in the sky which lasted for 23 years and required half a million computations. The computations of the measurements fill 13 volumes.

MEDICINE

Digestive Enzyme Fights Infections Caused from TB

➤ A METHOD that offers hope of curing more than half the patients who get empyema from tuberculosis or other infections was reported by Drs. Howard G. Reiser, L. C. Roettig and George E. Curtis of Ohio State University College of Medicine at the meeting in Boston of the American College of Surgeons.

The method makes use of one of the digestive enzymes, trypsin. When a solution of this chemical, marketed under the brand name Tryptar, is used to wash out the chest the thick pus becomes watery thin, and germs and particles of matter disappear within a few days.

In the small series of patients so far treated with the trypsin method, three needed no other treatment and in the others, the chest cavities were sterilized and less radical operations were needed than usual in this condition.

Science News Letter, November 4, 1950

GENERAL SCIENCE

Women in Homes Get Chance at $200 Award

➤ WOMEN in their homes will be given, for the first time this year, a chance to win a $200 award for research work done in their own home.

The award will go to the woman who submits the best paper describing original research carried out within her house. It will be presented at the Cleveland meeting of the American Association for the Advancement of Science in December. Sigma Delta Epsilon, graduate women's scientific fraternity, is granting the award.

Besides this new award, Sigma Delta Epsilon also offers an annual $1,600 fellowship to graduate women scientists and a $500 award for outstanding research work by a member of the fraternity.

Science News Letter, November 4, 1950

MEDICINE

Mass Blood Typing Not Advised for Atomic Defense

➤ DON'T start mass blood typing of the entire population now as preparation for atomic or other large scale disaster.

This, in effect, is the answer given by Dr. Leonard A. Scheele, Surgeon General of the U. S. Public Health Service, to State and Territorial Health Officers meeting in Washington and to communities throughout the nation who have been asking what to do about blood typing.

The only preparedness typing that should be done now is among those persons between the ages of 18 and 60 years who can give blood now for storage and who can be called on in an emergency as donors.

The need is to find among such persons those donors who have type O blood. That is the so-called universal type which can be given with least risk to any patient regardless of his own blood type.

Dr. Scheele's statement, he said, represents the best thinking of governmental agencies and professional societies on blood typing for civilian defense. Any mass typing at this time, he pointed out, should be undertaken "as a calculated risk and as a test of the method's effectiveness."

Reasons against mass blood typing of the whole population now are: 1. the drain on manpower and supplies of typing serum; 2. the danger of errors made by hastily trained personnel; 3. the fact that plasma and such plasma substitutes as salt water drinks, which require no typing, will be used during the immediate emergency period of a large scale disaster.

When the victims reach the hospitals, their blood can be quickly typed and cross-matched with donor blood if the victims need whole blood tranfusions.

Science News Letter, November 4, 1950

DENTISTRY

Drop One High Sugar Diet Item to Prevent Caries

➤ THE ELIMINATION of a single high sugar "habit" item from the diet—such as chewing gum, ice cream, jam or candy—often is sufficient to prevent the formation of cavities in the teeth.

This is reported by Dr. Herman Becks, professor of dental medicine in the University of California College of Dentistry, who recently completed a ten-year study of the relationship between sugar in the diet and dental caries.

The overall study supports earlier reports on the survey which indicate that caries development can be inhibited by reducing sugar consumption. The results are based upon observation of 1542 individuals, about half of whom were observed between 1938 and 1943 and the remainder between 1943 and 1948.

The scientists noted great improvement in caries-prevention in the second group—the result of refinements in technique. In the first group dietary restrictions kept 61% caries-free for a year; in the second group the figure was 81%.

Since so many individuals are unable or unwilling to remain for long on a severe diet, Dr. Becks experimented with the elimination of a single high sugar habit item. In 69.5% of the persons on whom this was tried there was a significant reduction in caries.

Dr. Becks said that while a satisfactory explanation for caries formation has yet to be found, the sugar-caries relationship and the dietary regime continue to form a practical basis for caries prevention.

Science News Letter, November 4, 1950

IN SCIEN

MEDICINE

Windpipe Banks May Serve Parts for Replacement

➤ LIVE windpipe banks may be added to nerve, artery and bone banks which doctors of the future can draw on when a patient needs a replacement for that part of his body.

Experiments pointing in that direction were reported to the American College of Surgeons in Boston by two groups of investigators, Drs. Orland Davies, J. Malcolm Edmiston and H. J. McCorkle of the University of California School of Medicine, and Dr. Victor Richards and John E. Connolly of Stanford University School of Medicine.

Heretofore tubes of plastic, metal and fibrous tissue have been used in attempts to replace sections of the windpipe, or trachea, when this had to be removed to eradicate disease.

Pieces of trachea, some fresh and some stored in a trachea bank, have been used successfully as grafts to bridge gaps in dogs' tracheas, both groups of surgical investigators reported.

Science News Letter, November 4, 1950

MEDICINE

PPLO May Be Cause of Many Mystery Illnesses

➤ SOME of the mystery illnesses of the present may turn out to be cases of infection with PPLO, short for pleuropneumonia-like organisms, it appears from studies reported by Drs. Harry E. Morton and Paul R. Leberman and Mr. Paul Francis Smith of the University of Pennsylvania School of Medicine to a meeting of the Society of American Bacteriologists in Philadelphia.

Until recently PPLO, which are very small disease germs, have been known chiefly as the cause of a contagious pneumonia combined with virulent pleurisy that attacks cattle. In 1937, a team of Harvard scientists found these PPLO in an abscess in a woman patient. Last spring, the Pennsylvania scientists reported evidence for the view that these germs were pretty much confined to the genito-urinary tract in humans and were transmitted like other venereal diseases.

Now the Pennsylvania scientists report that they have found PPLO in saliva, throat cultures and stools of human patients. This indicates that these tiny germs may invade the body by more than one route and may be responsible for infectious illnesses in which the causative germ is at present unknown.

Science News Letter, November 4, 1950

E FIELDS

MEDICINE

Drug May Cut Deaths In Heart Operations

➤ A LOCAL anesthetic drug, butocaine sulfate, may effect a tremendous saving in lives of patients undergoing heart operations, if experiments reported to the American College of Surgeons in Boston prove successful for human beings.

The experiments were reported by Drs. Alexander H. Bill, Jr., and Jacob C. Wagner of the University of Washington School of Medicine, Seattle.

Operations directly on the heart muscle, the Seattle surgeons pointed out, are apt to result in ventricular fibrillation. This is a dangerous, often fatal condition in which the muscle fibers twitch separately instead of all contracting together for a regular, strong beat. Drugs used to prevent ventricular fibrillation, such as procaine, quinidine and cocaine, have been "unsatisfactory" in the experience of Drs. Bill and Wagner.

Certain characteristics of butocaine sulfate led them to try it in operations on dogs' hearts. They injected a one percent solution of this drug into the sac around the heart five minutes before handling the heart itself. Fibrillation occurred in only two out of 50 cases, or 4%. In another series of 21 similar operations, where other methods of prevention were used, fatal ventricular fibrillation occurred in nine cases, or 43%.

Science News Letter, November 4, 1950

GENERAL SCIENCE

U. S. Open-Door Policy for Refugee Scientists Lauded

➤ AMERICANS who may have doubted the wisdom of opening our doors to refugee scientists from abroad can be heartened by a tribute from Prof. M. Minkowski, leading neurologist of Switzerland, written after the death of the neuropathologist Otto Marburg who found haven in the United States when he had to flee from Vienna after Hitler's invasion. Bowing to both U. S. and English scientists, Prof. Minkowski writes:

"The Anglo-Saxon colleagues have rendered a very great and highly to be appreciated service to Swiss neurology, as well as to neurological science in general. They did this in giving generous haven in time of need and distress, not only to Marburg, but also to quite a number of distinguished representatives of our science such as Freud, Wallenberg, Goldstein, Spiegel, F. H. Lewy, Riese, Wartenberg, v. Witzleben and many others. This made it possible for these men to proceed with their fruitful research work which, also under new conditions, has borne a rich harvest and continues to do so."

Echoing emphatically this statement is one from a refugee doctor, Dr. R. Wartenberg, now on the staff of the University of California Hospital and Medical Center, who says:

"All those refugee doctors who enjoy the great American hospitality appreciate this tribute to America, all the more so since it comes from a neutral source."

Science News Letter, November 4, 1950

ENTOMOLOGY

Desert Locust Invasion Is Nipped in Bud

➤ A DESERT locust invasion now menacing the food supplies of more than 500 million people in Africa and Asia will be stopped where it begins, the breeding grounds.

About the middle of this month, when the winter-breeding season begins, locust-fighting teams spread special poison bait wherever locust breeding grounds are found in Saudi Arabia.

The heaviest rains in 25 years caused this serious threat to the food supplies of the Middle East. Marshall Plan dollars, 179,000 of them, have been marked to aid this fight, the main cost of which will be borne by the British government. Local governments in the affiliated regions will also make contributions to the cost.

The ECA dollars will pay for 57 specially equipped trucks used by the locust-fighting teams.

Since ancient times, locusts have done serious damage to food crops of the world. The last dangerous threat also originated in Saudi Arabia after heavy rains in 1942. That threat was licked by a two-year war waged by the British government.

The present campaign aims at hitting the locusts in their breeding stages for more effective control. Locusts grow wings in about 40 days.

Science News Letter, November 4, 1950

AGRICULTURE

World Cotton Output Cut Eighth by Poor U. S. Crop

➤ THE WORST U. S. cotton crop in years will chop world-wide cotton production by more than an eighth, a statistical report by the Department of Agriculture revealed.

While the rest of the world showed a 2,000,000-bale jump in cotton output, here at home a drop of 6,259,000 bales is predicted. The result will be about 14% less cotton available at a time when economic recovery and speed-up in defense programs is fast increasing the demand for raw cotton.

Science News Letter, November 4, 1950

ENTOMOLOGY

Last Resort in Killing Flies: Use a Hammer

➤ HOUSEFLIES are becoming so resistant to DDT and other new insecticides that it seems sometimes "it takes a hammer to kill them," a research scientist of the U. S. Department of Agriculture reports.

Not only are flies building up immunity to many different chemical poisons. They are developing new biological habits as well, Dr. Fred C. Bishopp, chief of research for the Bureau of Entomology and Plant Quarantine and an expert on fly control, says.

Where residual sprays are used on the normal roosts of flies in houses or barns—the ceilings, beams and walls—flies now stay away. They spend their time on the floors or in grass or shubbery outside, he said. The change in habits appears to be passed on to succeeding generations, even though the youngsters have never come in contact with an insecticide

Dr. Bishopp told National Pest Control Association in Cincinnati recently that the growing immunity of flies to chemical attack is more serious than is generally realized.

It has now been found, he said, that a housefly strain which becomes resistant to one or two specific chemicals may be resistant to all of the commonly used insecticides. Once this high resistance has been developed, he said, it may persist for a long time.

This discovery contradicts the earlier scientific belief that a fly built up immunity only to a specific insecticide or chemical family, Dr. Bishopp said.

Science News Letter, November 4, 1950

MEDICINE

Terramycin May Save Peritonitis Victims

➤ TERRAMYCIN, one of the new so-called mold remedies, or antibiotics, now shows promise of saving lives threatened by peritonitis, dangerous and sometimes deadly complication of late-treated appendicitis and of other conditions of abdominal infection.

"Promising results" in trial of this drug in both human cases and on laboratory animals were reported by Lieut. Col. E. J. Pulaski, Col. Joseph R. Shaeffer, Capt. Curtis Artz and Major Hinton J. Baker, Brooke General Hospital and Brooke Army Medical Center, Fort Sam Houston, Texas, at the meeting in Boston of the American College of Surgeons.

The drug was first tested against more than 300 strains of microorganisms isolated from operation wounds. In these, it showed potential value as a remedy.

The drug can be given by mouth or by injection into a vein. For the human peritonitis cases it was given by vein.

Science News Letter, November 4, 1950

SAFETY

Transportation of Injured

Carrying the hurt to safety on improvised stretchers will be necessary if atomic disaster occurs. Be careful that the movement does not cause further injury or sickness.

By JANE STAFFORD

(Last in a series of articles on atomic first aid.)

➤ IF YOU are called on to give first aid in case of an atomic bomb explosion or a highway accident or even a medical emergency in your or your neighbor's home, part of your job may be to get the patient transported to a hospital or a doctor's office.

One of the things you will learn if you take a Red Cross course in first aid is to plan carefully before you start moving the patient. If fire is creeping close or there is danger of walls falling on the victim, you have to move fast. But if you have learned the art of planning for transportation, you will be able to make a plan and carry it out at top speed.

You must always keep in mind that the way you move or transport a patient should be such that it does not cause further injury or sickness. Where broken bones are suspected and you cannot apply splints before moving the patient, try to support or carry the patient in such a way that the broken part is kept as still as possible.

In the great majority of cases you will give first aid and then wait for an ambulance, moving the patient only on a doctor's order and following his directions for how to do it. If you have given first aid, so that bleeding is checked, the patient is breathing regularly and shock has been controlled, there is usually no great rush about doing anything more until the doctor or ambulance does arrive.

Do Not Bother Patient with Plans

When you do your planning, do it without bothering the patient and preferably where he cannot hear your discussion. Don't ask him any more questions than necessary. In planning, figure how the patient is going to be carried to the vehicle, how he is going to be put into it, what materials are needed, and what each helper will do.

For carrying seriously sick or injured persons, a stretcher is best. But putting a patient onto a stretcher and carrying a stretcher are not as easy as you may think. It takes three and preferably four strong people to do it.

If you follow the Red Cross first aid directions you will have one of the bearers put the stretcher close to the injured person, preferably two feet from his head and in a straight line with his body. The patient lies on his back with feet tied, unless his injuries require some other position.

Four Bearers Per Person

Three bearers take positions on one side of the patient, the fourth on the opposite side. If one side is injured, the three should be on the uninjured side. One bearer is at the shoulders, one at the hips and the third at the knees. The fourth is at the hips on the opposite side unless he has a special injured part to care for. All bearers face the injured person and kneel on one knee, the one nearest the patient's feet.

The bearer at the shoulder puts one arm under the patient's head, neck and shoulders and the other under the upper part of the back. The bearer at the knees puts one arm under the knees and the other under the ankles. The third bearer and the man opposite pass their arms under the patient's back and thighs.

The bearers all lift together at a signal and put the patient on the knees of the three men in line. The fourth then puts the stretcher under the patient. The patient is gently lowered to the stretcher on the signal "Lower."

To carry the stretcher, the bearers stand one at each end and one at each side. The stretcher is raised at a given signal and than at another signal the front and side bearers step off with the left foot and the rear bearer with the right foot. The patient should be carried feet first except up hills, stairs or other steep grades.

Stretchers may be improvised from blankets and poles, or even properly rolled blanket alone, from boards fastened together, or you may use a wide board, door, screen or ladder properly covered with boards or cushions.

If you are going to use a blanket stretcher, first put the blanket beside the patient and tuck—don't roll—two-thirds of the blanket close against the patient's body. Grasping him at hips and shoulders, roll him gently about one-eighth turn away from the blanket. Push the tucked part as far under him as possible, roll him back over the tucked blanket and one-eighth turn further over the blanket. Then pull the blanket on through.

Items for First Aid Kit

As a guide for your first aid kit, you might include these items listed in the American Red Cross First Aid Textbook:

One-inch compresses on adhesive in individual packages

Sterile gauze squares—about 3"x3"—in individual packages

MOVING WITH CARE—An improvised stretcher made with two tree branches and a blanket is used in transporting a patient. Three or four persons are needed to move one victim.

Assorted sterile bandage compresses in individual packages
Triangular bandages
Sterile gauze in individual packages of about one square yard
Roll of one-half inch adhesive
Inelastic tourniquet
Scissors (blunt tipped are best)
Three-inch splinter forceps
Paper cups
One-inch and two-inch roller bandages
Wire or thin board splints

Science News Letter, November 4, 1950

MEDICINE

New Operation Helps Colitis Patient

➤ A NEW operation for ulcerative colitis was reported by Drs. Benjamin G. P. Shafiroff and J. W. Hinton of New York University College of Medicine at the meeting in Boston of the American College of Surgeons.

The operation, termed denervation of the pelvic colon, consists in cutting certain nerves to the colon. "Marked improvement" in both symptoms and physical condition of five patients followed this operation.

Science News Letter, November 4, 1950

PUBLIC HEALTH

Grants for Research

➤ BLOOD, a new vitamin, preserving bones and teeth into old age, curing deafness in school children and a conception-to-death study of growth are among the 155 research problems for which the U.S. Public Health Service has awarded grants totalling $4,708,766.

The blood research will continue studies already under way under the leadership of Dr. E. J. Cohn and Dr. Charles A. Janeway of Harvard University on methods of separating elements of the blood, preserving them for longer periods and thus making blood more useful than ever, both in case of atomic attack and for saving lives threatened by such peacetime conditions as heart, kidney and joint diseases.

In order to determine whether radium treatment for prevention of deafness due to overgrowth of adenoid-like tissue is effective and cheap enough to be recommended for routine use in regular school health programs, 1,000 Baltimore, Md., school children will be tested under the grant to Dr. Samuel J. Crowe, Johns Hopkins University professor who originated the method.

The conception-to-death study is under the direction of Dr. Alfred Hamlin Washburn of the Child Research Council, Denver, Colo. Purpose of the study is to correlate physical, mental and emotional factors over a long period in order to develop more reliable methods for determining patterns of normal and healthy growth. Investigation of individual differences in growth of a selected group of persons from the prenatal period to death and through several generations of their descendants is planned. A score of research workers in pediatrics, physiology, biochemistry, hematology, nutrition and psychiatry will continue the investigations already begun on 166 persons.

In another study awarded a research grant, local police, hospitals and physicians will cooperate in furnishing patients for tests as to whether an artificial kidney can prevent death from an overdose of sleeping pills. This one will be conducted by Drs. Harold Jeghers and Theodore Koppanyi at Georgetown Hospital, Washington, D.C.

Science News Letter, November 4, 1950

FREUD

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ECONOMICS

Food More Costly in '51

➤ THE WORLD'S housewife will go to market in the coming year to buy more food than the farmer can supply.

This is the essence of an 81-page annual report issued by the Food and Agriculture Organization of the United Nations.

The Korean crisis and subsequent quickening of world rearmament, said FAO, will lift purchasing power and the demands by people nearly everywhere for food and other agricultural products.

At the same time, the United Nations agency predicts, supplies of food will be only slightly greater than in the past year, barely keeping pace with increases in world population.

The result, FAO experts believe, will be rising prices and a boom in international trade in agricultural products. Already wool and rubber have been gravely affected, they pointed out, and demands for rice, cotton, coffee and cocoa have begun to outrun available supplies.

The annual FAO study, entitled "World Outlook and State of Food and Agriculture—1950," pointed to the brighter side of the picture. Military expenditures by the U. S., it said, will put more dollars into international trade. Dollar shortages in other parts of the world will be reduced.

"It seems that bitter fighting on a peninsula of Asia and world-wide increases in economically unproductive armaments will do more to improve certain aspects of the international distribution of food than all the direct efforts made since 1946," wrote the FAO Director-General, Norris E. Dodd. "This is not a flattering commentary on international statesmanship."

In supplies of food per person, said the report, the world will make only a slight

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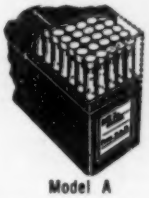

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gain. There may be no improvement in areas which need it most.

Meanwhile, with "a marked increase in dollars available to many countries . . .," said FAO, "the demand for food and agricultural products will tend to run ahead of supply . . . It is clear that prices will continue to rise."

When she gets to market, the world's housewife will find it costs more to feed her family.

Science News Letter, November 4, 1950

RADIO

No Worry on Color TV

➤ THE APPROXIMATELY 7,000,000 present owners of television sets have no cause to worry over the recent decision of the Federal Communications Commission to permit the Columbia Broadcasting System to put its color system on the air commercially. Present broadcasting will continue.

When CBS starts broadcasting in color, present sets, as they are, will not be able to pick up the picture either in color or in black-and-white. But practically all present broadcasting in black-and-white will continue and people will continue to receive and enjoy the programs.

Many will probably never want the color pictures, judging from the history of the motion picture industry. Technicolor was developed years ago but the great majority of all feature pictures are still produced in black and white because of the increased cost of technicolor and the lack of sufficient public demand for motion pictures in color.

For those who would want to enjoy the pictures in color which CBS will put on the air, new receivers will be available. Old receivers can be converted, experts explain, but the cost may be around $100. Old receivers can be converted to pick up pictures in black-and-white from the transmissions in color at probably half this cost. Must work remains to be done before low-cost satisfactory adapters are developed. The new color receivers will be more costly than present receivers, perhaps by $100 because they are more complicated.

The CBS system is based on revolving color-filter disks. Such disks are necessary in the receivers as well as in the cameras. Motors to run them are needed. The size of the direct-view picture tube is limited by the size of the spinning color disk that can be used in the home. However, magnifying lenses can be used if desired.

Electronic systems of color television, in contrast to this CBS mechanical system, transmit pictures in color that can be picked up in black-and-white on any television receiver. Because they are transmitted on standards that do not conflict with existing standards for black-and-white they are called compatible. Adapters are needed to receive the CBS pictures on present receivers because they are non-compatible. Considerable work must be done before any of the all-electronic systems reach the highest degree of perfection.

Science News Letter, November 4, 1950

ENGINEERING

Alarms and Recorders Detect Carbon Monoxide

➤ CARBON monoxide detecting instruments have evolved from unreliable canaries and mice through simple colorimetric devices to practical, continuously operating alarms, indicators and recorders, according to N. W. Hartz of Pittsburgh, Pa.

This expert of the Mine Safety Appliances Company, Pittsburgh, described new gas detecting instruments in Oklahoma City to the American Institute of Electrical Engineers. The carbon monoxide devices are activated by cells of Hopcalite, a catalyst that speeds up the change of carbon monoxide into carbon dioxide. The process causes a temperature rise. This is measured by a thermopile that sends electrical energy to alarms and recorders.

The demand for detectors of air pollution has led to the development of instruments to show danger that may come from undesirable gases from industrial plants and other sources. He described instruments to detect poisonous and flammable gases.

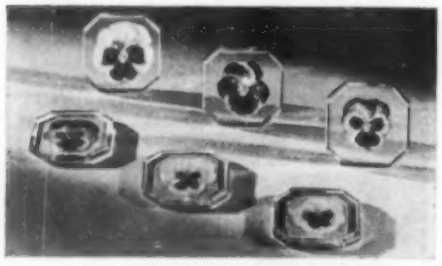
Present combustible gas detecting instruments have been simplified to the point where they are composed essentially of an electrical Wheatstone bridge in which a sample is drawn over a heated catalytic filament so that any combustibles present are burned upon contact with the hot wire.

Raising the temperature of the filament, Mr. Hartz stated, increases its electrical resistance in proportion to the percentage of the lower explosive limit concentration. Portable instruments of this type are powered by flashlight dry cells.

At the same meeting W. E., Belcher, Jr., of the Minneapolis Honeywell Instrument Company, described a device that detects unsafe temperatures in rotating machines, particularly in bearings. This new instrument is now about to emerge from the laboratory, he said.

Many applications for this type of instrument were listed by Mr. Belcher.

Science News Letter, November 4, 1950



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How a whiff of stibine led toward lower telephone costs

In the Bell System there are a million lead storage battery cells connected to telephone circuits in the central offices. Current seldom flows in or out of these cells beyond the trickle which keeps them charged. In the rare event of power failure, however, they stand ready to supply the current for your telephone service.

Even in this stand-by service, cells require water to make up for electrolysis. And they consume power and eventually wear out. But Bell Laboratories chemists discovered how to make a battery which lasts many more years and requires less attention — by changing a single ingredient, the clue to which came unexpectedly from another line of their research.

The clue was a minute trace of stibine gas in battery rooms — detected by electrochemists looking into atmospheric causes of relay contact corrosion. In small traces the gas was harmless but it gave chemists a useful hint.

For stibine is a compound of antimony — and antimony is used to harden the lead grids which serve as mechanical supports for a battery's active materials. Tracing the stibine, the chemists discovered that antimony is leached out of the positive grid and enters into chemical reactions which hasten self-discharge and shorten battery life.

Meanwhile, in the field of cable sheath research Bell metallurgists had discovered that calcium could be used instead of antimony to harden lead. And theory showed that calcium would not react destructively in a battery. The result is the new long-life calcium-lead battery which cuts battery replacement costs, goes for months without additional water, and needs but ⅕ the trickle current to keep its charge.

It demonstrates again how diverse lines of research come together at Bell Telephone Laboratories to keep down the cost of telephone service.

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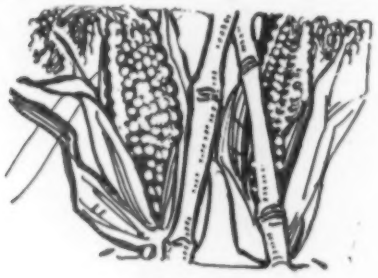
AGRICULTURE

NATURE RAMBLINGS



Maize

➤ IN THE mighty harvest of autumn are many things natively American: pumpkins, squash and cranberries, sweet potatoes, tomatoes and turkey, pecans, peanuts, Brazil nuts, black walnuts, chocolate and tobacco.

But of all the Thanksgiving Day bounty which the American Indian bestowed upon the white man—or which the settlers took from him without thanks—the greatest has been corn. It was maize, the Indian corn, which brought the Pilgrims through their first desperate winters of sickness and starvation. Now it is a billion-dollar U. S. crop.

Where this giant grass with the giant ears came from originally is still an unsolved mystery. It probably grew first in the South American highlands, but by the time the European settlers came its cultivation had spread to North America, as far north as the climate would allow. Mummy burials in Peru, Mexico, our own Southwest, have funeral offerings of corn. There is abundant evidence that the mound-builders knew the grain too.

American Indians believed maize was a food of the gods, dropped from their hands when they flew back to heaven in indignation at man's ingratitude and greed. Some tribes treated the crow as a sacred bird, believing this bird was the seed-bearer who brought corn from heaven.

One early Indian legend tells of the First Mother, born of a beautiful plant. When famine came to the land she begged her husband to kill her and strew fragments of her body over the fields. The Great Spirit told the First Father to obey. He did what his wife asked, and after a time great waving grass sprang from the earth, ripened and was corn.

The Iroquois told another story. A mighty chief climbed upon a mountain and asked the Great Spirit to send more food for his people, for they were weary of berries and wild game. The Great Spirit bade him go into the fields with his wife and children in the moon of the rains and wait there for three days. This the old man did, and there his family slept. When tribesmen came later, the old chief and his wife and children had turned to corn.

However maize appeared, it was found in America by the Spanish in Florida, John Smith at Jamestown, the Pilgrims at Plymouth. The settlers called the grain Indian corn, and then simply corn.

In 17th century English, "corn" meant all kinds of grain—wheat, barley, rye and all the rest—yet so completely did the new crop dominate colonial agriculture that the word was appropriated for it. Today, with corn a mighty crop across the land, the other bread-grasses our grandsires grew are crowded under the ignominious title "small grains." But the Englishman, perhaps with greater conscience, still calls American corn by its rightful Indian name, maize.

Science News Letter, November 4, 1950

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ENGINEERING

Military Map Making Faster with New Process

➤ FASTER production of military maps was promised in Baltimore by Dr. Bernhard Landow, development specialist of Ansco Research Laboratories.

He reported to the Photographic Society of America a new technique, known as the Hersol process, developed in cooperation with the U. S. Army Map Service. It provides a method for making color separation negatives on contact from line copy. In printing color maps, a separate negative and plate are required for each color on the map.

Development of this process is expected to save time and labor.

Science News Letter, November 4, 1950

On This Week's Cover

➤ A STARFISH, when viewed from the oral surface, exhibits its tube feet to good advantage. When the starfish of the phylum echinodermata is usually seen on a rock or on sand its mouth is at the center of the under surface which is known as the oral surface.

The tube feet are small muscular tubes filled with water and ending in small vacuum discs called suckers. By these the starfish can catch hold of a rock or other object and either moves the object toward itself or pulls its own body toward the rock. The feet also function as sense organs.

Science News Letter, November 4, 1950

• Books of the Week •

TO SERVE YOU: To get books, send us a check or money order to cover retail price. Address Book Dept., SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C. Ask for free publication direct from issuing organizations.

ADVENTURE INTO THE UNKNOWN: The First Fifty Years of the General Electric Research Laboratory—Laurence A. Hawkins—*Morrow*, 150 p., illus., $3.50. Depicts the development of General Electric's Research Laboratory.

AIRWAYS ABROAD: The Story of American World Air Routes—Henry Ladd Smith—*University of Wisconsin Press*, 355 p., illus., $4.00. The story of America's merchant air fleet and of the men who pioneered the caravan routes of the air age.

ANNUAL REPORT 1949—*The Rockefeller Foundation*, 462 p., illus., paper, free upon request to publisher, 49 West 49th St., New York, N. Y. Report on the research advancements in the natural sciences, the social sciences and the humanities which were supported by the foundation in 1949.

BATS FROM NEW CALEDONIA, THE SOLOMON ISLANDS, AND NEW HEBRIDES—Colin Campbell Sanborn and A. J. Nicholson—*Chicago Natural History Museum*, 25 p., illus., paper, 40 cents.

BETTER HEALTH THROUGH BETTER RICE—*Williams-Waterman Fund*, 36 p., illus., free upon request to publisher, 405 Lexington Ave., New York 17, N. Y. Outlines the Philippine program and the steps that may be taken to improve the health of millions of people in the rice-eating nations of the world. (See SNL, Oct. 28, 1950, p. 277.)

THE CARE AND BREEDING OF LABORATORY ANIMALS—Edmond J. Farris, Ed.—*Wiley*, 515 p., illus., $8.00. Among the animals considered are the rat, opossum, monkey, rabbit, cat, mouse, hamster, and drosophila.

CHARLES DARWIN'S AUTOBIOGRAPHY: With His Notes and Letters Depicting the Growth of the Origin of Species—Francis Darwin, Ed. *Schuman*, 266 p., $3.50. Presents the essential material found in Charles Darwin's original three-volume work which has long been out of print.

CURRENT TRENDS IN THE RELATION OF PSYCHOLOGY TO MEDICINE—Wayne Dennis and others—*University of Pittsburgh Press*, 189 p., $3.75. Eight lectures under the auspices of the University of Pittsburgh's Department of Psychology delivered during Feb. 9-10, 1950, in the Stephen Collins Foster Memorial.

THE EFFECTS OF ATOMIC WEAPONS—Samuel Glasstone, Executive Editor—*McGraw-Hill*, 456 p., illus., $3.00. A commercial edition of the original Gov't. Printing Office publication. See SNL, Aug. 19, pp. 122, 127, and Aug. 26, p. 143.

EXPERIMENTS IN PHYSICAL CHEMISTRY—Otto F. Steinbach and Cecil V. King—*American*, 250 p., illus., $3.50. A wide variety of experiments accompanied by brief theoretical introductions is presented.

FOREST PRODUCTS RESEARCH GUIDE—Standing Committee on Products and Research—*National Lumber Manufacturers Association*, 4th ed., 335 p., paper, $5.00. A volume listing research agencies and their activities.

FUNCTIONAL ANATOMY OF THE VERTEBRATES—Daniel P. Quiring—*McGraw-Hill*, 624 p., illus., $5.50. Various systems of the chordate animal are presented. An advanced college text.

FUNDAMENTALS OF OPTICS—Francis A. Jenkins and Harvey E. White—*McGraw-Hill*, 2nd ed., 647 p., illus., $7.00. A college text brought up-to-date.

A GENERAL KINETIC THEORY OF LIQUIDS—M. Born and H. S. Green—*Cambridge University Press*, 98 p., illus., $2.25. A general outline of the statistical theory consisting of six articles originally appearing in the *Proceedings of the Royal Society*.

GENERAL PROCEDURE FOR MANUFACTURING SWISS CHEESE—George P. Sanders, Lloyd A. Burkey and Harry R. Lochry—*Gov't. Printing Office*, U. S. Dept. of Ag. Circ. No. 851, 18 p., illus., paper, 10 cents.

HIGH-SPEED COMPUTING DEVICES—Staff of Engineering Research Associates—*McGraw-Hill*, 451 p., illus., $6.50. Presents various mathematical methods and the physical mechanisms which have been developed for use in automatic computation.

HOW TO SURVIVE AN ATOMIC BOMB—Richard Gerstell—*Combat Forces Press*, 150 p., illus., $1.95; paper bound edition, *Bantam Books*, 149 p., illus., paper, 25 cents. A book about how you might save your life in case atomic bombs fall. Authoritative, it is available both in a hard cover edition and a newsstand edition. The author is a consultant to the Civil Defense Office of the National Security Resources Board.

IMPORTED VARIETIES OF DATES IN THE UNITED STATES—Roy W. Nixon—*Gov't. Printing Office*, U. S. Dept. of Ag. Circ. No. 834, 144 p., illus., paper, 40 cents.

INTERNAL COMBUSTION ENGINES: Analysis and Practice—Edward F. Obert—*International Textbook Co.*, 2nd ed., 596 p., illus., $7.25. A text written for engineering students.

INTERNATIONAL RELATIONS: In the Age of the Conflict Between Democracy and Dictatorship—Robert Strausz-Hupe and Stefan T. Possony—*McGraw-Hill*, 947 p., illus., $6.00. The question of the survival or collapse of Western civilization is discussed. One of a political science series.

INTRODUCTION TO ALGEBRAIC GEOMETRY — W. Gordon Welchman—*Cambridge University Press*, 349 p., illus., $4.50. An advanced college text.

LAWN PROBLEMS OF THE SOUTHWEST: With Supplemental Information on the Selection, Transplanting, and Care of Trees and Shrubs for the Home—Howard J. Dittmer—*University of New Mexico Press*, 76 p., illus., paper, $1.00.

A MIDDLE DEVONIAN OCTACTINELLID SPONGE FROM NEW YORK—Eugene S. Richardson, Jr.—*Chicago Natural History Museum*, 9 p., illus., paper, 25 cents. A specimen of a fossil sponge is described.

MINERAL COMMODITIES OF CALIFORNIA: Geologic Occurrence, Economic Development, and Utilization of the State's Mineral Resources—Staff of the Division of Mines—*Department of Natural Resources, State of California*, 443 p., illus., $2.00.

THE MIRACLE OF GROWTH—Museum of Science and Industry, Chicago and the University of Illinois Professional Colleges, Chicago—*University of Illinois Press*, 73 p., illus., $2.00. Explains in non-technical language how human beings begin and how they grow. Excellent illustrations.

MODERN CHEMICAL PROCESSES: A Series of Articles Describing Chemical Manufacturing Plants—Editors of Industrial and Engineering Chemistry—*Reinhold*, 222 p., illus., $4.00. Detailed information about 23 recently developed American chemical processes operated on a full-scale production level.

PLANT BIOCHEMISTRY—James Bonner—*Academic*, 537 p., illus., $6.80. A text for courses in plant or agricultural biochemistry on the advanced undergraduate level.

REPRESENTATIVE AMERICAN SPEECHES: 1949-1950—A. Craig Baird, Ed.—*H. W. Wilson*, 264 p., $1.75. Among the speeches included are those of Truman, Acheson, Urey, Bunche and Reuther.

THE ROCKEFELLER FOUNDATION: A Review for 1949—Chester I. Barnard—Rockefeller Foundation, 85 p., illus., paper, free upon request to publisher, 49 West 49th St., New York, N. Y. Presents the Foundation's program highlights of the year 1949.

SHOULD WE HAVE MORE TVA'S—Walter M. Daniels—*H. W. Wilson*, 225 p., $1.75. Presents some of the divergent viewpoints.

THE SOLUBILITY OF NONELECTROLYTES—Joel H. Hildebrand and Robert L. Scott—*Reinhold*, 3rd ed., 488 p., illus., $10.00. A standard reference brought up-to-date.

A STUDY OF THE ELEGANT TINAMOUS GENUS *EUDROMIA*—Boardman Conover—*Chicago Natural History Museum*, 11 p., paper, 15 cents. A study of some of the members of this family of quail-like South American bird.

A STUDY OF THE SPOTTED TINAMOUS GENUS *NOTHURA* — Boardman Conover — *Chicago Natural History Museum*, 23 p., paper, 25 cents. A brief study of a few of the family of these quail-like South American birds.

A SYLLABUS OF LABORATORY EXAMINATIONS IN CLINICAL DIAGNOSIS: Critical Evaluation of Laboratory Procedures in the Study of the Patient—Thomas Hale Ham, Ed.—*Harvard University Press*, 496 p., illus., paper, $5.00.

A SYMPOSIUM ON STEROID HORMONES—Edgar S. Gordon, Ed.—*University of Wisconsin Press*, 396 p., illus., $6.50. Covers fundamental and applied aspects of steroid research. A symposium held as part of the University of Wisconsin's hundredth anniversary.

THE TEACHING OF SCIENCE IN PUBLIC HIGH SCHOOLS: An Inquiry into Offerings, Enrollments and Selected Teaching Conditions, 1947-48—Philip G. Johnson—*Gov't. Printing Office*, Federal Security Agency Bull. 1950, No. 9, illus., paper, 20 cents.

TRUE FAITH AND ALLEGIANCE: An Inquiry into Education for Human Brotherhood and Understanding—*National Education Association*, 101 p., illus., paper, 75 cents. Prepared by the NEA Commission for the Defense of Democracy through Education.

THE UTILIZATION OF SUCROSE—Leslie F. Wiggins—*Sugar Research Foundation*, 43 p., illus., paper, free upon request to publlisher, 52 Wall St., New York 5, N. Y.

• New Machines and Gadgets •

For addresses where you can get more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., Washington 6, D. C. and ask for Gadget Bulletin 543. To receive this Gadget Bulletin without special request each week, remit $1.50 for one year's subscription.

PLASTIC-COVERED MITTENS for youngsters and teen-agers are made of warm material coated with waterproof vinylite resin which is flexible even in cold weather and resistant to cracking and peeling. These lightweight but warm mittens are available in red, green and brown.

Science News Letter, November 4, 1950

QUICK HOSE COUPLING which can be opened under pressure, an English development, consists of two metal parts for each half coupling. The two halves are identical, and a joint is instantaneously made by placing the two halves together and giving a slight twist.

Science News Letter, November 4, 1950

HEAT-RESISTANT MATERIAL, for lining high-temperature furnaces, is produced from a base of mullite, a well-known super-refractory material, and is said to be equal or superior to the best refractory linings now in use. A special feature is the low cost.

Science News Letter, November 4, 1950

TELEVISION MICROPHONE for both speakers and singers is an unobtrusive cane-like device, as shown in the picture, that affords the public a better view of the entertainer. The easily-held, one-pound device

is as sensitive as the finest broadcasting microphones.

Science News Letter, November 4, 1950

IMPACT WRENCH is a small cylindrical tool that is placed upright over and in contact with a nut at the time its upper end is struck with a hammer. By means of a cam-like device, the impact of the hammer is translated into a rotary motion to turn the nut.

Science News Letter, November 4, 1950

DEXTROSE TABLETS of various vegetable sources, and agar tablets, are now available for the preparation of culture media for growing microrganisms in scientific laboratories. To prepare media, a tablet is put into a small amount of distilled water and shaken.

Science News Letter, November 4, 1950

BUNSEN BURNER, to provide the gas flame used in laboratories, is on one side of a base with a platform that regulates the flame size. When not in use, a tiny pilot-light continues to burn. When the platform is touched by finger or hand, the full hot flame immediately appears.

Science News Letter, November 4, 1950

SPARK PLUG WRENCH for aircraft engines has a patented feature for holding the plug during its installation or removal. It simplifies the job of handling the spark plugs, which are often in hard-to-get-at places on complicated engines, and lessens danger to plugs from dropping.

Science News Letter, November 4, 1950

Do You Know?

Ability to *taste* may have some connection with the thyroid gland.

Gardens that are riots of color in sunlight are practically colorless in moonlight.

Many tons of sugar are used in the manufacture of *dynamite;* mixed with the glycerine before nitrating, sugar yields a nitroglycerine less likely to freeze.

Atomic power will come first in ship propulsion, it is predicted; vessels are able to carry the six-foot concrete shield needed around an atomic pile, the atom smasher.

Umbrella birds of the Andes mountains, jet-black and crow-size, have large crests of filmy feathers which can be thrown forward and outward to form a protection over eyes and beak.

Different fragrances to impart pleasing *odors* should be used in various rooms, an expert says; an exhilarating odor is suggested for a party room and a relaxing odor for bedrooms.

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